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Gas Plant Wrinkles

Paper Presented at Michigan Gas Association Convention

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The subject of this paper is one with which everyone has come in contact at various times, either through the gas journals or other papers pertaining to the gas business.

The valuable hints obtained from these "wrinkles" have led to the solution of some problem, which may have confronted you at one time or another.

I will have to confine myself to the few devices which we call our own, in use at our own plant, and those contributed by a couple of other companies.

1. Automatic Coke Quencher

This device consists of a steel overhead tank, which receives all the water that passes through our cooling coils. A three-inch pipe is connected into the bottom of this tank and runs out over the track, which carries the coke car at the rear of our ovens. This three-inch discharge pipe passes up into the tank a couple of feet and the top of it is ground off slightly to make a smooth seat.

Three guide posts are attached to the top of the pipe, inside of which is a float, made from two small tin cans soldered together with a small hole in the top. A quarter-inch rod is fastened to the top of can, which is carried to the top of the tank and attached to an arm. The arm is operated by a piece of wire running over to the motor which operates the car puller. The operation of the float is similar in operation to a closet float.

The overflow pipe is passed through the bottom of the tank up to a higher level than the discharge pipe so that it carries off the surplus water when the sprinkler is not in use.

The space occupied by the water between the discharge and overflow pipe contains just enough water to quench a car of coke sufficiently and not have the coke soaked. The sprinkler can be operated from the ground level by just pulling the chain. When the water gets down to the seat of the float level it automatically shuts off. A small vent must be tapped into the pipe just below the float seat, and carried above the water level, otherwise the float will bump up and down when it approaches the seat after the water has been expelled and not shut off.

After the float has shut off, the tank fills itself again and by the time the second oven of coke is ready to be quenched the sprinkler will be ready to operate.

This device serves two purposes: First, that of utilizing cooling water for quenching purposes, and second, that of having a uniform quantity of water on your coke all the time.

2. Tapping Water Tank of a Gas Holder

Often it becomes necessary to use your relief holder for storage of tar or gas oil. Rather than pump this material out, it could be drained out if there was a hole tapped at the water tank with valves attached.

This can be accomplished by taking a small box, with top off and tack some padding around the edges, pass it down into the water tank to point where you want your tap made by attaching it to a rod, and then press the box firmly against the tank and proceed to tap.

When the hole is through, the water that is on the inside of the box will, of course, run out at once, but the pressure of the water around the box will prevent the surrounding water from coming out, and a valve can easily be attached.

3. Ventilating a Governor Hole

A governor hole often contains a sufficient amount of gas, which might make it dangerous to work in for any length of time.

Good air can readily be furnished by attaching a small blacksmith blower to the floor of a Ford truck and belting it up to the demountable rim with one wheel jacked up. Run a three-inch conductor pipe from the fan down into the manhole and good air will always be had, and the hole well ventilated.

4. Uniform Coal Weight

With the oven method of carbonization the coal is charged into the top of the oven from a larry car. We found that, although our scales were set for a uniform weight, there was always a tendency to run the weight over from 50 to 100 lb., because of the men not watching the scale beam.

This was overcome by putting an ordinary door bell in series with four dry cells, with two small copper plates at the terminals of each wire. One copper plate was placed across the tip of the scale beam. When the beam raises half way, it makes a connection with the dry cells and rings the bell at once, thereby insuring a constant uniform weight.

The Battle Creek Gas Company contributed the following two articles:

1. Water-Sealed Oven Valve

The oven valve, as indicated on the sketch, remains full of liquor up to the overflow to the hydraulic main at all times. In sealed position, the

sealing valve immerses in this liquor and shuts off the gas connection from the hydraulic main to the ovens or from the ovens to the hydraulic main. The valve is supplied with suitable sprays so that there is sufficient temperature drop in the valve to eliminate to a large degree the formation of pitch. It is provided with a cleanout so that it is easily accessible when operating.

2. Steam of Reciprocating Pump to Drive a Lubricator

The lubricator driver is a simple cylinder with a piston, both of the ends of the piston being connected to the cylinder cock lines at either end of the steam cylinder of the pump, this connection being made above the cylinder cock itself, so that there is no shut off between the cylinder and the device itself. These connections from the pump cylinder are equipped with a needle valve so that the amount of steam allowed with the lubricator cylinder can be regulated. The device is a success, having been in use for two or three years on the works pumps with practically no attention.

I have the following contribution to make from the Detroit City Gas Company. Contributed by John W. Batten, assistant general manager:

1. A Grease Seal for Gas Exhauster Stuffing Boxes

A box of two-inch planks six inches high was built up to surround the entire stuffing box, the bottom edges being trimmed to conform with the shape of the bearing caps and a half inch felt gasket being placed along the edge to make a tight fit. This device is held down solidly with metal straps, and filled to the top with No. 2 machinery grease, the stuffing box being covered by several inches of grease.

This scheme was first tried on a street pressure unit operating at pressure of up to five pounds per square inch. We find it necessary to renew with fresh grease about once per month because the grease becomes too liquid, allowing the gas to travel along the shaft to the oil-cup openings. Previously these stuffing boxes leaked continually. The grease seal is useful on exhausters where the bearings have worn down slightly so that the gland space is a trifle eccentric, making the packing tight at the bottom and loose at the top, as it will keep the stuffing boxes tight until it is advisable to renew the bearings. It has proven especially successful on low-pressure exhausters in coal gas service.

2. Steel Turnings for Scrubbing Water Gas

It was believed that steel turnings could take the place of wood shavings in a scrubber, and that they would have the advantages of being semi-permanent; that a deposit of tar and oil could be washed down with hot circulating liquor and that the differential through the tower would always be less than when wood shavings were used.

The tower used is located after the primary condenser. It is nine feet six inches in diameter by forty feet high. The shell contains two layers of steel turnings. The lower layer is thirteen feet deep and the upper layer ten feet deep. The top of the shell is equipped with sprays for putting hot water over the turnings to clear them. Below the lower layer we have sprays through which cold liquor may be pumped.

A good deal of tar is removed by the scrubber. Test in Nov., 1921, showed 80 per cent of tar removed. Test Aug., 1922, showed 85 per cent of tota tar removed. However, all the tar is not removed—and a certain contamination of the material in the boxes still goes on.

It is too early to estimate the savings due to increased life of purifying material; however, it wil easily amount to a respectable sum.

The differential pressure through the scrubber is from three to seven inches of water.

3. Service Street Tee Safety Stopper

The service street tee safety stopper is designed to replace the present common practice of using a rag to stop the flow of gas, when making a service connection to a main.

When using a rag as a stopper in the service street tee, difficulty is experienced in getting the rag to hold in place against the gas pressure, with the result that there is considerable leakage. This is especially true in case of connections to high-pressure mains.

The use of this stopper eliminates all the disadvantages attendant upon the use of a rag stopper. It is easily and quickly placed in the tee, is gas tight, and reduces the danger of asphyxiation to the workmen to a minimum.

4. Planks Used for Purifier Trays

We are now replacing all our purifier trays as they wear out with 2x6-in. rough yellow pine planks spaced about 3½ in. in two layers with 1⅛x2½-in. spacer strips placed at two to two and one-half foot intervals. The cost of the old type made-up tray is about 28 cents per square foot, while the planking and strips cost 12 cents per square foot.

This idea has been thoroughly tried out at all our stations. The advantages of the planking, in addition to first cost, are:

1. The cost of handling is less. They can be laid quicker and removed easier, accurate spacing of supporting beams not being necessary. They are easier to clean than trays.

2. Maintenance is lower. Planks are not so likely to warp as they are heavier than tray stock. Where a crane bucket is used for emptying the boxes they are not so likely to be caught and broken by the bucket. No carpenter work is necessary to keep them in good condition.

We find the distribution of the gas to be as good as with made-up trays.

For elevated boxes with bottom dump holes, it is of advantage to use a few trays or short sections of planks directly over the holes, which can readily be removed to clear the openings.

5. A Tee with Split Sleeve Used by the Detroit City Gas Company for Making Lateral or Branch Connections to Gas Main

This tee is a modification of the tee used in connection with a tapping machine, which is being market-

d by the H. Mueller Manufacturing Company, of Decatur, Ill., and is in general use on water mains.

On the Detroit tee the sleeve was lengthened so as to make it of the same length as a standard sleeve, thus giving more support to the pipe at the point where the tap is made. The sleeve is equipped with standard bell ends. The leg is made long, and is tapped and plugged so as to permit the use of stopper or bag. The bell of the leg is designed for attaching the Mueller tapping machine.

For Making Connections to Low-Pressure Mains

The tee is applied by setting the sleeve on the pipe, tightening the belts, and placing the tee so that the outlet opening is in the desired position for making the connection. The joints on the sleeve are then made in the usual manner. The Mueller tapping machine is then attached to the bell on the outlet opening of the tee and the main pipe is drilled as described in the Mueller company circular. The tapping machine making a gas-tight connection with the tee, there is no escape of gas when the tap is made. When the tap has been completed, the drill is withdrawn sufficiently to permit the placing of a stopper or bag in the left of the tee through the tap provided for that purpose. When this stopper has been placed, the Mueller tapping machine is removed and pipe laying is started; the stopper or bag is removed and plug inserted as soon as the branch line is ready to receive the gas.

For Making Connections to High-Pressure Lines

Where stoppers or bags cannot be used to hold the gas, a tee with a short branch is used. The Mueller special gate is used. This gate is provided with one spigot and a bell and adapted to the Mueller tapping machine. When the tap has been completed the drill is withdrawn and the gate is closed before the machine is removed. The gas is thus held until the branch line is ready to receive it.

The Mueller tapping machine can be used for taps ranging from three to eight inches in diameter. This company has used this tee connection, making branch connections as large as eight inches in eight-inch mains, and eight-inch branch connections in twenty-four-inch mains.

The advantages of use of this special tee in making lateral connections are that a connection can be made on either high or low pressure lines without interrupting the supply or reducing the pressure, and with less escaping of gas than with the old method.

Connections can be made at a lower cost by the use of the special tee and the tapping machine.

In the use of this method of making connections to existing mains, the question has been raised with regard to loss in pressure or added resistance due to the sharp angle put in the connection as compared with the standard tee. The cutter that is used in the Mueller tapping machine has just enough smaller diameter than the branch line to be connected to permit it to pass through the branch-line fitting or valve. The hole that is cut in the trunk-line main leaves a sharp edge. This has not been found to be the cause of any trouble due to losses in pressure. The advantages gained in the use of this method of making connections have been considered to more than offset the possible disadvantages.

6. A Bench Producer Charging Hole Cover

Secondary combustion under the furnace arch and in the nostrils with its consequent high temperatures at the wrong point and damage to the setting, can usually be laid to air being drawn in over the fire through leaks in the charging hole. The usual run of lids used, cast steel or cast iron, lined or unlined, are likely to be found burned away at the seating surfaces, cracked or warped to a point where even a liberal application of mud after each producer charge will not keep air from leaking in.

It is desirable to have an opening large enough to permit charging the producer with a minimum of poking, with a non-warping seat and lid with true seating surfaces and a means of insuring that the lid is properly seated. A water gas generator neck and lid has these properties.

The producer neck is developed to fit in with the tile ring used in the charging nozzle of water gas generators. A special pattern seat is used, made as low as possible so that coke which spills over can easily be swept aside. The bead cast in the bottom of the ring serves to stiffen the ring and help hold it in place. The cover carrier and guide rails are standard water gas equipment. The carriage engages with the lugs on the seat which act as stops to make the cover register properly with the seat and to draw the cover down firmly against the seat by means of the tee screw. A lever and cam arrangement to lift and sear the cover may be preferable to the tee screw, but has not yet been tried out.

7. Using Stack Draft to Ventilate Boiler Drums While Working in Them

When it is urgent that a boiler be returned to service as soon as possible when let down for cleaning, turbining and repairs, it is necessary for the boiler washers and repairmen to enter the drums while they are uncomfortably hot. Poor work is likely to be the result, as the workmen cannot avoid hastening and slighting important work under those conditions.

In the case of Stirling water tube boilers, the simple arrangement shown in the attached sketch utilizes the stack draft to cool and ventilate the drums while men are working in them. A section of light steel piping is used to connect the furnace manhole with the manhole in the mud drum. When working in any one of the upper drums, the manholes in the other two are stopped up with sheets of metal or cardboard so that the full effect of the ventilation is obtained where needed.

8. Brick Dome for Water Gas Machines

In order to standardize on a dome for all our water gas machines and to avoid the necessity of using large special tile, we designed a dome which could be built of a nine-inch brick tapering slightly on one end. This brick can be made by any refractory company without making up special molds.

The openings at the top and side of the dome are turned by using a larger circle tile of special shape. The mold charge on these shapes is very small.

By thus standardizing we are able to cut down our stock of special water gas dome tile.

The domes are built up over a specially built form which consists of boxlike sectors belted together and easily removed from the inside and taken out through the clinker doors or manholes.

9. Replacing Furnace Arches Under Retorts in Coal Gas Benches

When making repairs to gas retort benches, in cases where major repairs or replacement of furnace arches have been required, it has been customary with gas companies and bench builders to remove the entire setting of retorts, and rebuild complete from and including the furnace arch or such parts of arch as needed replacement. In this way, it often occurred that good retorts and settings were torn out on account of failure of the structure.

This method consists in:

1. Removing the old masonry under the center bottom retort, inserting successively under each joint between the retort sections a timber resting at each end on the outer wall of the combustion chamber.

2. Rebuild as much of furnace arch as necessary, beginning with the last section removed and working outward, taking out timbers under retorts as each successive section is completed.

It will be noted that in this type of construction the original tile supports under the center retort are replaced by brick piers. This is necessary on account of the difficulty of putting in replacement tile to fully occupy the vertical space and make tight joints between top furnace arch and bottom of retort.

It is difficult to estimate in money the value of work of this kind, as it varies as much with different conditions of benches. It is often possible to defer the resetting of a bench and keep the retorts in service a year or possibly two years longer by this method than would otherwise be possible.

10. Safety Chains for Track Hoppers

Guards extending above the track level to keep people from falling into track hoppers have to be removed when cars are placed over the hopper. Also, they do not protect against the possibility of men working in the cars falling through the car dump openings directly into the hopper. Accidents of this nature have happened at our plants in the past in which two employees have been killed by being drawn into the crusher.

Our track hoppers have now been equipped with safety chains placed about twelve inches apart and extending lengthwise of the hopper, as shown by the attached print. The chains swing aside to allow large lumps of coal or coke to pass so that there is no trouble from clogging as would happen if a bar grating were used. Each chain is attached to a coil spring at one or both ends, the purpose of the springs being to absorb shocks which otherwise might break the chain.

11. Spray Pond Located on Roof

We wanted to be able to cool water for our water gas condensing system and decided on a spray pond as a means of cooling. No suitable location on the ground was available and it was consequently decided to locate the spray on the roof of the coke shed.

Several advantages were gained by locating the sprays at this point. In the first place, we saved valuable ground space and, as a matter of fact, the ground space was not actually available. If we had not located the sprays on the roof we would not have been able to use them at all. In the second place, the sprays are up in the air, exposed to the normal air currents, which would not have been the case if they had been on the ground, shielded by buildings. Further, the water, after leaving the sprays, travels over the roof for a considerable distance and being spread out in a thin sheet experiences a greater drop in temperature than would be obtained from the sprays alone. The drop in temperature due to evaporation from the film on the room amounts to between 10 and 20 deg. Cent., depending on the weather conditions.

It was necessary, of course, to install louvres on two sides of the sprays to protect adjoining property other than our own from mist which might be carried over by high winds, and on the third side a louvre was installed to protect our own property.

The roof was rather steep and consequently no considerable additional load was imposed by the weight of the water flowing over it, as the water was never more than a fraction of an inch in depth.

As compared with a cooling tower the spray pond offers several distinct advantages:

1. Amount of Cooling.—The spray pond will cool to within 5 deg. of atmosphere at an inlet liquor temperature of 170 deg.—atmosphere 80 deg.; humidity 80 per cent. The cooling tower will do the same or possibly a little better when designed properly.

2. Ground space required with the spray pond is practically nil when located on the roof, thus making a considerable saving.

3. First Cost (to Cool 600 gpm.).—For cooling tower, exclusive of pumps, $21,000; for spray pond (including resurfacing roof), $2,500.

4. Operating Cost.—Pumping cost is the same in both cases. In addition to the pumping cost the cooling tower requires for air for forced draught about forty horse-power. At forty pounds of steam per horse-power and 50 cents per thousand pounds for steam, this costs 80 cents per hour, or $19.20 per day, or $5,760 for 300-day year.

If no suitable roof is available and a spray pond on the ground must be built, the ground space will be immensely increased and, further, to cool gas liquor from 170 deg. to atmosphere it will be necessary to circulate through two sets of sprays.

12. Reinforced Concrete Slab Construction for Coke Quenching Tracks in Retort Houses

In our two coal gas plants, the burned-off charges are pushed from the retorts, dropping through chutes in the floor directly into the coke buggies spotted below the chutes on an industrial railway and are quenched in these buggies by overhead sprays before the buggies are moved. After quenching, the buggies are pushed by laborers to the track hoppers and dumped, the coke being carried from that point to the screening plant by belt conveyors or skip hoists.

The tracks on which the buggies run have to be

kept in good condition and the basement floor must give the coke wheelers a good footing in order to make handling of the buggies possible. Track maintenance in the past had been a large and continuous item of expense, as the continuous use of the tracks and the wash of the quenching water had made it impossible to set the concrete properly. As a consequence, extra labor was needed to push the buggies over the irregular tracks, and to replace the buggies when derailed.

The plan was, therefore, adopted of making up the tracks in sections outside the retort house and rolling the sections into place after the concrete was thoroughly set. Rough wood forms were used and each slab heavily reinforced with plant scrap iron. Switches, cross-overs and straight sections were all made up in this manner and put into position between rounds of charges without causing any delay in operation. It was thought that it would be necessary to join the concrete slab sections with some connection other than the ordinary fish plates used between the rails. This has not been found to be necessary, the only precaution being to insure a uniform well-tamped bed of cinders to set the slabs of cement on.

All the retort house tracks have been rebuilt in this fashion. The first sections tried out have been in use for twelve months and are perfect to-day. Not a cent has been spent for maintenance on this slab type of construction, and the track looks good for many years of service. Retort house track maintenance in our two plants previously averaged about $250 per month.

The rails no longer sag or spread, and the buggies handle so easily that two coke wheelers now do the work which formerly required three men per shift at each plant. Our labor saving from this source is approximately $900 per month.

13. A Brick Boiler Front

This design was developed for use with the plunger type of underfeed stoker, its main features being a cast-iron lintel that extends across the whole front of the boiler over the retorts, tile-lined fire doors with cotter-bar latches and elimination of the usual metal front for the lower part of the boilers.

The lintel permits the renewal of the stoker retorts by taking out just a few bricks instead of removing the metal front as was necessary when that front was used. The back edge of the lintel slopes down to meet the dead plates to facilitate removal of ash and clinkers. The lintel extends back of the metal pilasters at the sides of the boilers, which helps to keep it from pushing out.

The door frames made up from special patterns are anchored back firmly into the brickwork, and a brick arch formed over the doors. The doors themselves fit closely into the frames and are lined with a 2¼-in. clay tile cut to shape and held in place by bolts the heads of which are recessed in the tile and covered with high-temperature cement to protect them from the heat. The heavy hinges and the cotter bar serve to hold the doors true and to seat them tightly.

This front has been in service on the first installation five months and has proved effective in reducing maintenance and bettering boiler efficiency. With the old type of unlined doors with the ordinary latch it was impossible to keep the doors tight or even closed, the heat when operating with a pressure over the fire, as is sometimes necessary, would quickly burn up the doors and frames. This trouble has been entirely overcome. Air leakage has been reduced and furnace temperature and efficiency materially improved. Boiler-room working conditions are very much better, as the smoke and heat that could not be avoided with leaky fronts has been diminished.

14. Ventilating Stacks for Retort House Quenching Floor

The coked charges from our coal gas retorts are dropped through chutes in the floor into buggies on a track in the basement, quenching taking place in the buggies by means of sprays located directly over each buggy. The steam arising from the coke in the low-ceiling basement made working conditions extremely unsatisfactory for the men who quench and wheel the coke away. Obscured vision because of the steam was responsible for numerous accidents from tripping or being struck by buggies and tools.

This condition was very satisfactorily eliminated by cutting holes about two by three feet in dimension through the floor on the discharging side of the benches directly over the coke buggy track and erecting short stacks to carry the vapors away. One stack was placed on a line with the division wall between all the benches, extending about seven feet above the floor line so as to release the steam above the heads of men working on the floor above. Instead of interfering with the work of the men on this floor, the stacks have proved effective in shielding them partly from the heat of the coke when the charges are being pushed.

A continuous wooden apron extends the full length of the benches under the floor to confine the steam and carry it to the stacks. A strong draft is created by the stacks and the basements are now remarkably free from steam or smoke.

The stacks were originally built of inch boards which shrunk and warped considerably and occasionally caught on fire. These are now being replaced by concrete stacks built by using a collapsible wooden form to enclose the old wood of stacks, the latter being left in place to serve as the inner wall of the form and using chicken wiring for reinforcing. The first stack thus rebuilt, with a wall thickness of about 2½ in., has given satisfactory service for a number of months.

Welded sheet steel stacks are being tried out at another plant for a similar ventilating system. These may prove preferable to the concrete stacks where there is doubt as to the carrying capacity of the floor.

15. A Special Split Sleeve for the Repair of Breaks at Joints on Large Cast-Iron Mains

This sleeve permits making repairs to transverse breaks or short, longitudinal breaks in the hub or spigot ends of pipe in large cast-iron mains, without removing the broken section or even reducing the pressure or interrupting the gas supply in any manner. The use of the sleeve also effects a considerable saving in the cost of making repairs.

The sleeve is of sufficient inside diameter to en-

compass the hub of the pipe, and is equipped with an A. G. A. standard hub at each end.

When the sleeve is applied, suitable gaskets are placed between the halves, the bolts of the sleeve are drawn tight, the sleeve is shifted so as to cover the break, and a joint is made at each end in the usual manner.

Should the leak through the break be very great, it may be necessary to tap the body of the sleeve and equip it with a vent pipe, so as to carry the gas away while the joints are being made. The pipe is removed and the opening plugged after the joints are completed.

The use of this sleeve is of particular advantage in making repairs to split hubs on large, high-pressure lines, where the supply cannot be interrupted or diminished.

With this company, repairs to transverse breaks or short longitudinal breaks in the body of the pipe have always been repaired with split sleeves, where the application of a straight sleeve was not interfered with by the hub. Split hubs and split spigot ends, or other breaks in the vicinity of the joints, were repaired by removing the broken section and inserting a nipple in its place, with the aid of a straight, solid sleeve.

Repairs by this method necessitated cutting the line, reducing the pressure, and by-passing or suspending the gas supply.

The weight of the sleeves are 558, 712 and 872 lb., respectively, for 16 in., 20 in. and 24 in. sleeves.

A comparison of costs of the two methods, as applied to the repair of a broken hub on a 16-in. line, is given in the following table:

COST OF REPAIRS—USING SOLID SLEEVE AND SHORT PIECE OF PIPE

Labor	$90.86	
Material	83.94	
Total	$174.80	
Pressure-department labor	26.87*	
		$201.67

*Time spent by pressure department includes only the actual field charge, and does not take into consideration any time spent by plant department, operating valves, etc.

ESTIMATED COST BY USING THE SPECIAL SPLIT SLEEVE

Labor to excavate 7½ cu. yd. dirt at $4.30 per cubic yard	$33.25	
Labor to place special hub split sleeve and pour joints, four men, one hour each; four hours at 65 cents per hour	2.60	
Labor to calk two 16-in. joints; one hour at 65 cents per hour	0.65	
		$35.50
Material cost—special 16-in. hub split sleeve; 530 lb. at 13 cents per pound	$42.40	
64 lb. pig lead at 8 cents per lb.	5.12	
2 in. hemp at 11 cents per lb.	0.23	
		47.75
Total cost, labor and material of special sleeve installation		$83.25
Total cost of repairs by using solid sleeve and short piece of pipe		$201.67
Cost of repairs by using special sleeve		83.25
Amount saved if special sleeve had been used		$118.42

Commercializing the Residual Department of a Gas Plant*

Some Suggestions as to How This May Be Accomplished

By GEORGE H. WARING, Grand Rapids

The writer has been impressed with the lack of commercial effort on the part of many gas plants in disposing of residuals to the best advantage. This has been particularly true in the past few years, and many reasons can be assigned as the cause. Prior to the war several gas plants were able to offset the charge for coal carbonized with the residual credit, and as far back as the early nineties the writer recalls one large gas plant, in the Middle West, that through its large residual credit was able to put gas in the holder at 12 cents per thousand less than cost, or a profit of 12 cents per thousand.

Until the industrial depression of 1920, the Citizens Gas Company, of Indianapolis, Ind., sold gas at 60 cents per thousand at a profit, largely due to the splendid market which the company had built up for its residuals. In 1919 at least one small coal gas company in Michigan was able to pay for its coal carbonized by the credit received from the disposition of its coke and tar, as it did not save its ammonia.

In the writer's opinion, the gas managers of to-day have been prone to consider the residual department as a side issue and are willing to accept any price offered by buyers of residuals. This is particularly true of tar sales. Little effort has been made to create a market for their residuals. There is a great demand for cheaper gas, and this can best be met by efficient gas plants through greater net returns from residuals.

Some suggestions which are not new, and have been demonstrated to be advantageous, may be recalled to the attention of the reader with profit:

*Paper read before Michigan Gas Association meeting.

Coke

The use of coke and breeze should be demonstrated by the gas company through its efficient use in its own plant, and a splendid paper on this subject was presented by the late Charles F. Prichard, of Lynn, Mass., before the American Gas Light Association in 1901. Mr. Prichard demonstrates that coke and breeze are efficient boiler fuels, and shows how to use them and the results obtained by their use. Years ago gas companies solicited the sale of coke from house to house, and gave demonstrations showing how to use it, not only in steam plants but in homes for domestic purposes. In the early days men were employed to solicit coke sales, but not gas appliances, and today appliance salesmen are employed but no coke salesmen. The price of coke in every city should be higher than the price for the best bituminous coal, and slightly lower than anthracite coal.

At the last meeting of the Illinois Gas Association the following resolution was adopted:

"Resolved, That the Illinois Gas Association appoint a committee to consider the causes underlying the unsatisfactory condition of the domestic coke market, and prepare a memorial, to be presented to the next meeting of the American Gas Association, looking to a nation-wide campaign of education on the domestic use of coke."

A paper on the following subject will be presented for the technical section at the general session of the American Gas Association meeting on Oct. 26, 1922, "The Preparation and Sale of Coke for the Domestic Market." The technical section considered this the most important subject of general interest, and has so offered it to the association.

There never has been a better opportunity to educate the public in the use of gas coke than the present time, and it is to be hoped that every coal gas plant in Michigan will take advantage of the situation and demonstrate to the public in general that gas coke is the cleanest and most efficient fuel on the market for the price. It would be very short-sighted policy to charge excessive prices for gas coke, even if the demand should permit. It would be far better to fix a price that would attract new consumers in order to educate them in the use of coke and retain them in years to come.

Tar

The average gas company does not appreciate the value of this by-product, as it is frequently sold to one of the large tar manufacturers at less than its fuel value. Many uses have been found for tar and its products; in fact, they are so numerous that there is no excuse for disposing of it wastefully. Some of these uses are as follows:

Fuel, timber preserving, tarred felt, paint for stone, brickwork and iron; road construction, road dust settler, waterproofing, roof paint, roofing, germicides, etc.

First of all the gas company should determine its fuel value. Again we refer to Mr. Prichard's paper, as mentioned under "Coke," also Technical Paper No. 268, in which W. W. O'Dell, of the Bureau of Mines, describes the preparation and uses of tar and its simple crude derivatives. We wish to call particular attention to that part of Mr. O'Dell's paper which refers to the advantages of tar fuel. According to Mr. Prichard's paper, with coal at $7.50 per ton tar should be worth to the gas company 5½ cents per gallon and, according to Mr. O'Dell, 7½ cents per gallon.

The question now presents itself, How many gas companies are getting coal for less than $7.50 per ton, and how many are getting over 5½ cents per gallon for their tar? Offhand, it could be safely stated that no gas company in Michigan can afford not to burn its tar either under its benches or under its boilers. Those companies that are not tied up with contracts should investigate this proposition.

Tar Production

Some gas companies in Michigan are not producing as much tar as they should. A fair amount of coal-tar production is twelve gallons per ton, and a fair tar production from a water gas plant would be 15 per cent of the gas oil used.

Ammonia

The marketing of ammonia is not as simple as the marketing of coke and tar, as the company cannot use any of it in the production of gas, nor is there at the present time a retail market for ammonia as there is for the other two residuals.

In the bulletin of abstracts of the A. G. A., July 1, 1922, Vol. 16, page 551, will be found an article which describes the use of crude gas liquor as fertilizer. It is stated by Johannes Mews that 330 gas works in Germany have been supplying 1½ per cent crude ammonia liquor to farmers for ten to twenty years; that it has been very valuable as a fertilizer, and in some cases has increased the fertility of the soil 50 per cent. What a splendid outlet this would be for our small coal gas plants in America. We should at once interest our agricultural colleges in this matter and get their co-operation.

Ammonia Production

A coal gas plant should produce from four to five pounds of total ammonia per ton of coal carbonized. As 20 per cent of this is fixed ammonia, we should not expect over 3.2 to 4 lb. of free ammonia. It is a serious question as to whether it pays, in small plants, to recover the fixed ammonia on account of the extra cost.

Summary

In order to pay for the coal carbonized with the residual credit we have set up the following example of what a plant should be able to do with gas coal at $7 per ton:

Coke, 1,350 lb. (67½%) at $9.13 per ton	88.0%	$6.16
Tar, 12 gal. at 4 cents per gal.	6.9	0.48
Total ammonia, 4½ lb. per ton at 8 cents per lb.	5.1	0.36
	100.0%	$7.00

(*Continued on page* 281.)

Naphthalene Deposits and Their Removal

As Affecting Mains and Services

By A. H. ANDERSON, Detroit City Gas Company, Detroit, Mich.

Several years ago, when the naphthalene situation in Detroit became acute, due to changes in the quality of oil used for the manufacture of water gas, we attempted to clean out considerable lengths of high-pressure main by introducing heated kerosene or gasoline into the main under pressure. This method accomplished the result we desired but it was slow and costly. Some time after this we discarded the old method and cleared them instead by forcing gasoline into the service, thus dissolving the naphthalene and presumably running the gasoline-naphthalene mixture into the drip. This was a great improvement over blowing out services with air, but it was noted that naphthalene complaints had a great tendency to reappear themselves, either in the same service or in other services near by on the same main.

Present Procedure

We now proceed as follows with naphthalene complaints:

The presence of naphthalene in the high-pressure system is first reported in district regulators by the regulator maintenance men, and in the drips by the drip men.

This information is turned over to the pressure department, which proceeds to flush the main with gasoline. The high point of the main is located and if necessary a riser similar to a drip stock is located at that point. Gasoline is then introduced under pressure, if necessary, until no unusual loss in pressure through the area under treatment is noted. The gasoline is then recovered from the drips and used again in different locations until it becomes saturated with naphthalene. Of course, only a portion of the gasoline is recovered. The length of main treated in this way will vary from several hundred feet to several thousand feet, depending on local conditions.

In the low-pressure system, the presence of naphthalene is noted in the service complaints, and the procedure is as follows:

When a number of naphthalene stoppages have been grouped along a certain main, the high point of the main is again noted, and gasoline introduced through convenient services, district regulators or special taps. The gasoline is recovered from the drips, as in the case of the high-pressure system. The amount of gasoline introduced is that necessary to restore the drop in pressure along the line to normal and may vary from ten to fifty gallons. The amount recovered varies. Sometimes the entire amount can be reclaimed from the drips, and sometimes the entire amount is lost, that is, it cannot be recovered from the drips in the vicinity.

Certain experiments have been carried out in the high-pressure system with atomizing the gasoline under pressure. This would seem to be a more satisfactory method for its introduction, as simple washing only removes naphthalene from the bottom of the main and hardly that deposited on the surface of the upper half of the main.

As an instance of the benefits derived from flushing mains with gasoline we flushed a four-inch main on Merrell between Fort and Jefferson, 2,250 ft. Pressure before flushing was twelve-tenths; after flushing, thirty-nine tenths inches of water. This took twenty-four gallons of gasoline and sixteen man hours.

The Use of Solvents Other than Gasoline

As was previously remarked, we have at times heated kerosene and injected it into the mains in the form of a fine spray. The method was finally abandoned on the score of labor cost which was very high.

We made some experiments with Pintsch gas hydrocarbon in high-pressure mains. Here we attempted to atomize it under pressure; due to the presence of dirt in the hydrocarbon it plugged the atomizer.

We also attempted to use hydrocarbon in low-pressure mains, but discontinued its use, because for several days after the services were cleaned, the burners in the houses on the treated main burned with a very yellow smoky flame and blackened mantles and cooking utensils. Besides, where the hydrocarbon was introduced into the house service a very small amount spilled would permeate the house with a strong objectionable odor, which lasted for days.

We would like to use benzol on the high-pressure mains instead of gasoline, because benzol is much more effective solvent for naphthalene and can be obtained at practically the same price as gasoline. At present, however, our storage facilities for such dangerous substands are fully occupied by gasoline. We have to have gasoline for our cars and trucks and to use benzol we would have to install special underground tanks. Benzol has, however, at least four times the solvent power for naphthalene that gasoline has, and its use would be economical from every standpoint. Benzol, however, could scarcely be used in the low-pressure mains and services, both because of the odor of the commercial article and because of its effect in blackening mantels and cooking utensils.

Results

Since establishing our present method of treating naphthalene deposits in 1920 our complaints have been as follows:

1920	6,142
1921	4,895
1922	239

Normally we should have had between 1,500 and 2,000 naphthalene complaints from Jan. 1 to Aug. 1, 1922.

Following is a tabulation showing how mains are flushed and the results, in the case of low-pressure mains, in increased pressure at the low point:

	Length (Feet)	Size (Inches) (H. P.)	Gasoline (Gallons)	Time (Hrs.)
Flushed mains from Station "I" to Fourth and Vine	12,250	4	...	..
Regulator, Wyandotte	7,800	8	...	..
Also cleared one service on North Biddle Street	12,500	6	340	34
Flushed "B" central pumping line from Beaufait and Jefferson to Warren. Thence west on Warren to Chene and south on Chene to Gratiot Avenue	20,100	16 and 10	310	26
Flushed Concord high-pressure line "B" central)	9,700	16	...	..
From Kercheval north to Harper	1,800	6	360	36
Flushed junction high-pressure line from Lafayette to Michigan ("A" central)	8,300	16	120	10

	Length (Feet)	Size (L. P.)	Gasoline (Gal.)	Time (Hr.)	Pressure Start (10th)	Finish (10th)
Brady Street from Woodward to Beaubien	1,450	4	70	15	15	42
Brush Street from Brady to Alexandrine	900	4	20	5	15	42
Solvay Street rom Fort north to railroad	2,000	4	75	20	22	41
Fort Street from Chene to Mt. Elliott	3,900	4	200	25	18	39
Lafayette Street from Beaufait to Mt. Elliott	800	6	75	20	34	41
Mt. Elliott Street from Lafayette to Fort	350	6	25	5	33	40
Baker Street from Sixteenth to Twenty-first	1,650	6	150	25	..	..
Twentieth Street from Howard to Baker	1,050	6	75	10	29	37
Nineteenth Street from Howard to Baker	975	4	75	10	28	38
Total	85,525		1,895	236		

An Experiment with An Eight Foot Six Inch Water Gas Set

Paper Presented at Michigan Gas Association Meeting

By HARRY S. PARKER, Superintendent Muskegon Traction and Lighting Company

About the time this experience started, we were considering shutting down our coal gas benches with only one water gas set capable of supplying our daily send out while the other was badly in need of repairs.

To begin with, this eight foot six inch machine had been so badly burned that it was necessary to replace the upper half of the shell. This, no doubt, was caused from lack of proper lining. The clinker and ash doors were also warped and out of shape so that it was impossible to make same tight, so it was necessary to remove the upper half of generator shell and also replace clinker and ash doors.

I might state here that this set was of the older type, having scrubber and condenser direct connected to machine with air-blast connection at bottom of generator and at side of carburetor. The checker bricks were very narrowly spaced and extended higher in the carburetor and superheater than at present, but a tryout was necessary in order to see just what results could be obtained.

After a week's trial we were confronted with several discouraging facts, namely, the back pressure on the machine ran thirty-eight and forty inches with twenty pounds of steam, which caused our stack cover to leak badly. The oil averaged about four and one-half gallons per thousand with generator fuel at fifty pounds per thousand, giving us in the neighborhood of 560 B.t.u. and about 20,000 per hour make.

Not having the desired capital to invest in a new unit, we made up our minds that this set could be made to produce better results with a few changes in the machine itself and around the plant.

The first step taken to reduce back pressure was to remove all the trays from the scrubber, which gave us little if any relief from pressure trouble.

We next investigated the main running from the condenser to the relief holder by uncovering the same's entire length. Leaving the condenser was a sixteen-inch main which extended into the yard about 100 ft. and reduced to a ten-inch, which ran at right angles some fifty feet and was connected to the old gas main that at one time fed the city, being used later as a connection to small relief holder now used for oil storage. Passing through a by-pass at this point, gas traveled back toward the machine again some sixty feet through this ten-inch main and into a twelve-inch main which extended from there to the relief holder, a distance of about 150 ft.

This information enabled us to account for some of the back pressure at least, so we connected the twelve-inch main directly to the sixteen-inch just outside of building, eliminating some 120 ft. of main and four 90 deg. bends.

During the next test we were somewhat encour-

aged owing to the fact that the back pressure had been reduced three inches water column and our make had increased 5,000 per hour with oil and generator fuel about the same as before.

That much accomplished, we then studied the set from all angles for trouble and found many. In the first place, the up and down valve connection between generator and carburetor was too small and so badly burned that neither valved seated properly, having a two-inch up-run steam connection and two one and one-half inch down-run connections and, as I said before, the blast to carburetor was connected at the side, as was customary when machine was built.

After some consideration we decided to make the following changes in order to increase the make and secure better results: The first step taken was to increase the up and down run steam to three inches, placing a trap at the point where steam entered the generator, which insured us dry steam to the machine. The up and down run valve was increased in size and of a later design than that previously used, while the carburetor blast was removed from the side and placed on top, which compelled us to use a different type oil spray. It was during this overhauling that we decided to rechecker both carburetor and superheater and instead of spacing brick two and one-half inches, as had been the custom, we spaced them four inches at the bottom, and the last five tiers on the top were spaced five inches in the carburetor and lowered the checker brick enough so that oil would come in contact with the brick at the extreme circle. We also reduced the number of layers of brick in the superheater in order that we would get a free opening to the off-take pipe and spaced these brick about four inches apart.

You can be assured that our next test was watched with considerable anxiety inasmuch as we had spent considerably money and was about to an end as far as repairs went if the machine did not produce results, but at the end of one week's test we were more than pleased with the results obtained. The generator fuel figured thirty-seven pounds per thousand and oil 2.9,while our make had been increased 35,000 per hour or a total of 60,000, giving us an average of 545 B.t.u.

I still think that by increasing the size of connection between the carburetor and superheater, as well as the off-take pipe and main leading to relief holder, that we could increase our make even more. However, our results at present are very satisfactory and we are able to supply the present demand by running two eight-hour shifts.

About two months ago we disconnected the scrubber shell and condenser from this set entirely and now make gas direct to the relief holder, which reduced our back pressure some three-inch water column, and with the aid of a settling basin or tar separator we intend to build whereby we can circulate water back through the machine instead of using fresh water we expect to better present oil results.

Notes on Small Plant Operations*

A paper written on any phase of the operation of a gas plant and not accompanied with scientific data and experimental facts is not always of great value. However, when I went to Coldwater, Mich., a condition had to be met and, following the rule of necessity, we did what we could to get by.

The condition that existed was that of inadequate condenser capacity. We have one condenser ahead of the exhauster, and after the exhauster, in order, are P. and A. tar extractor, a second condenser, and then two scrubbers.

It had been the practice to run the gas through the first condenser at about 120 deg. Fahr. and the second condenser was to bring the gas to about 80 deg. The scrubbers were run on circulating crude liquor, with the ordinary amount of fresh water added to give good ammonia results.

The second condenser had gone bad, so we used additional water in the first condenser to cool the gas as much as possible. We were able to get the temperatures down to about 60 deg. at the exhauster. It had become unprofitable to run the ammonia still, since we had no way of storing the concentrated liquor, and in handling with small drums the freight cost more than we could get out of it. To dilute our wash waters, which pass through city sewers, we added fresh scrubbing water until we had as much going into both scrubbers as they would handle. The temperature of the gas at this point went to 55-60 deg.

The following points were noted: First, our exhauster speed was reduced considerably and the primary condenser handled the bulk of the tar. There has been no evidence of naphthalene in any of our apparatus, not even showing on the purifier lids. Our purifiers do not get tarry and wet as they did under the old way of operating. Where we once had to steam the holder inlet at regular intervals of about thirty days, we have not had to steam for the past several months. Our naphthalene troubles on the streets are not what they were a couple of years ago. If we are doing something that will cause trouble we have had no evidence of it for two years.

We do not recover ammonia. As to the effect on the quality of our gas, I might say that we take two B.t.u. tests daily and through 1921 we had an average yield of 5.80 ft. of gas per pound of coal and the average B.t.u. was 561 for the year.

About the same time we made these changes in the Coldwater plant I assumed charge of the plant at Hillsdale. The primary scrubber at Hillsdale was of the old-fashioned atmospheric type, consisting of a series of vertical 6-in. cast-iron pipe. The gas was going to the exhauster at as high as 180 deg. in hot weather. First we made a spray that cooled these pipes on the outside and reduced our temperatures to about 90 deg. This helped some, but we were not able to get the temperature much lower. We had no adequate scrubber, so we placed a spray in the top of each 6-in. pipe of the old condenser.

We reduced the temperature by this process to about 65 deg., took out most of the tar and scrubbed out ammonia in one operation. The results with naphthalene, dirty boxes and inlet stoppages were the same as at Coldwater. Exhauster speeds noticeably reduced the amount of boiler fuel required.

I recommend this kind of experimenting to operators of small plants, and will be glad to co-operate with them to the utmost.

*Paper read by H. A. Sebald, manager of the Coldwater (Mich.) Gas Light & Fuel Company, before the Michigan Gas Association on board S.S. "Manitou," Sept. 13-16, 1922.

As the Journal Views It

The "American Gas Journal" Dailies and the Convention

From time to time announcements of the progress of the plans for publishing the AMERICAN GAS JOURNAL daily during the convention of the American Gas Association have been made in these columns, and these announcements have been followed by expressions of approval from many connected with the gas industry.

Although the convention is a month away, the plans for this widely welcomed innovation have been perfected and the undertaking, which was recognized as a huge one, has been assured of success. Both those who are so fortunate as to attend and those who will be held at home will receive a service that, we have no hesitation in declaring, has never been equalled in the gas industry. This will be accomplished through an organization that has been builded with the one object of rendering service at the time it is most valuable. That this will be accomplished is shown by the fact that the AMERICAN GAS JOURNAL will be distributed before 8 o'clock each morning of the convention. Simultaneously with the distribution at the convention it will be placed in the mails at Atlantic City, so that every gas company will be kept in touch with the progress of the convention while it is in session.

In commenting on the progressiveness displayed by the JOURNAL, an executive of a large company told of an arrangement he had made that will take full advantage of the service offered. He stated that he had arranged for the calling of department meetings of his company, when the JOURNAL will be read and a short discussion held. By this means every member of the organization is going to be brought in close touch with the association, and its influence will be greatly broadened. We believe that this plan can be adopted quite generally, and there can be no doubt that it will result in great benefit.

Much of the success of the preliminaries for the JOURNAL daily issues has been due to the close cooperation that has been extended by the American Gas Association officials. They have realized the value to the industry and have been unsparing in their efforts to aid.

It is a noteworthy fact that the gas industry is practically the only one holding a national convention which has not been served by a daily publication during the annual gathering.

We are confident that the gas industry will have just cause to be proud of the AMERICAN GAS JOURNAL daily issues.

Strength of Gas Industry Securities

Many factors have entered into the recent activity in Wall Street in the securities of gas companies, not the least of which has been the coal strike with the resultant shortage. Also the fact that the New York State Public Service Commission has ordered a reduction in the B.t.u. content of gas supplied throughout that State has been taken into consideration by both investors and speculators and they have not hesitated to back their belief in the future of the industry, despite the report that was issued by Babson in his statistical record.

The strength displayed by Consolidated Gas of New York, which followed immediately after the decision of the United States Supreme Court in favor of the company's contention that the 80-cent rate was confiscatory and the releasing of the impounded funds, has been maintained until a few days ago it made a new high record.

There can be no doubt but that the financial world is convinced that the gas industry is in for a period of prosperity and sane regulation. This opinion can be traced, at least in part, to the activities on the part of the local companies in devoting attention to the building of good-will. This combined with the excellent work that is being done by the American Gas Association in this direction has produced results.

While this activity reflects the belief of the financial man in the strength of listed securities, of course, there is no way of telling how a new issue will be received except in cases of large companies. But it is probable that any company requiring financing for the extension and improvement of plant will have little difficulty in placing securities in any form.

It is natural also that much of the strength thus developed will be reflected in the support of issues in the customer ownership field.

Looking at the situation in the financial markets, it would seem as if gas securities are at last coming into their own.

Michigan Association Boat Trip Big Success

Gathering Developed Great Good-Fellowship

From every standpoint the thirtieth annual convention of the Michigan Gas Association, which was held last week was a huge success. The convention was held on the steamship *Manitou* as it cruised through Lake Michigan and the 175 members and guests of the association had a most interesting, varied and profitable trip.

The papers which were read were very interesting and made a wide appeal.

President James A. Brown reviewed the activities of the association and declared that the gas industry will soon realize its greatest development, but that this condition is dependent upon good service and having public good-will. Henry W. Douglas and Alfred Fischer, of the Michigan committee on public utility information told of the progress that had been made during the past year.

W. E. Derwent and W. F. Dunker

Charles W. Person, secretary of the publicity and advertising section of the American Gas Association then told of the efforts that are being made by that national organization to better relations between the industry and the general public.

"Service" was the keynote of the address by Sherman T. Handy, member of the Michigan Public Utility Commission.

"I believe that a company that renders good service should be allowed a good rate of return on its investment and the utility that refuses or is unable to give the public the service they demand has no right to serious consideration in its pleas for dividends," said Mr. Handy.

Papers were presented by Professor A. E. White, on the association fellowship; F. W. Seymour, on "Liquid Purification at Battle Creek," and by R. H. Lewis, of the Ruud Manufacturing Company, on "Water Heaters."

In discussing Professor White's paper, Henry W. Douglas, Ann Arbor, stated that it was the business of the industry to attract young men. He said that he felt this fellowship was a step in that direction.

Mr. Seymour's paper stirred up considerable interest and there were many questions as to operation results.

Fred W. Seymour, of the Battle Creek Gas Company, was named president of the association; G. H. Waring, of Grand Rapids, was made vice-president,

G. H. Waring, New Vice-President of the Association

and Albert G. Schroeder was re-elected secretary-treasurer.

The time and place committee recommended that the 1923 meeting be held in Grand Rapids, subject to approval by the executive committee.

Sidelights on the Convention

Much good-natured fun developed during the three-day trip, a great deal of which was spontaneous and not included in the regular entertainment program.

When the boat docked at Petoskey for a short stay practically everybody visited the town. There was a Knights Templars conclave in session, holding competitive drills on a large field at the edge of the town. The martial music of the band inspired a deep desire on the part of some of the voyagers to march and then came into existence the Johnny Sayer Chowder and Marching Association.

A parade was at once organized and eight handy

Retiring President J. A. Brown

men followed the sixteen-piece band. As was fitting, the procession was headed by Mr. Sayer, who also conducted the band. He got music out of that organization such as has never been equalled. The parade was formed into divisions following the band in this manner:

First Division—Ira C. Misner, Milwaukee branch of the Sayer Marching Club. Second division—Jerry Duggan, St. Louis, or headquarters of this new club; George Cressler, Cincinnati branch; Dr. Sanders, personal doctor to the standard bearer; Ike Rosson, also of the St. Louis headquarters; William Dunker, Cin-

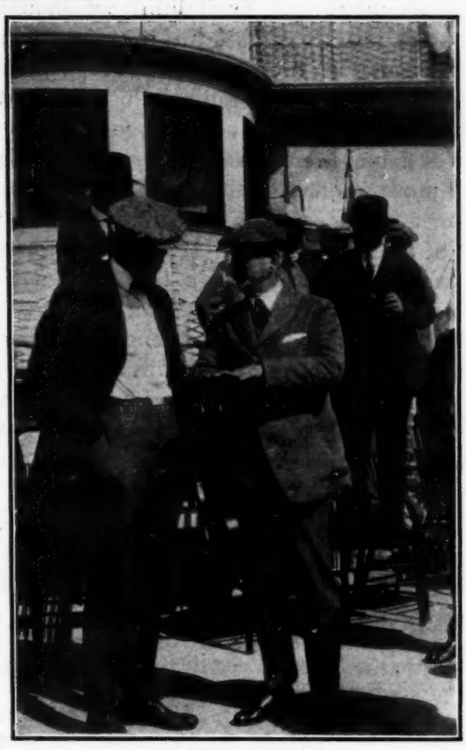
George Curfman

cinnati branch; Walter Turner, charter member of the Chicago branch.

When the organization had been settled the commander-in-chief gave the word to march and the band started through the town. The paraders walked on first one foot and then the other, as is customary with human beings, and all had private ideas as to who was in step with the music. Some of them felt impelled to run, so inspired were they. George Cressler, who, because of his musical inclinations, became popularly known as "The Sheik," created a lot of comment by his splendid marching ability.

The climax of the parade came when the police force of the town halted traffic on the only well-defined corner that could be seen with the naked eye and allowed the procession right of way over everything. The police force, following the parade, was seen to wipe his brow and heard to mutter that this was a busy day. Jerry Duggan shifted his bundle from his right to his left arm as he passed the officer of the law, by way of salute. Jerry declared that he felt that the police department was entitled to something for the hospitality that was displayed.

The parade ended at the boat, where a snake dance around the decks was put on, and this was followed by a band concert on the deck. Some of the marchers were overcome by the display of enthusiasm on the part of the spectators and their spirits needed close attention. This was given heartily.



Talking It Over

George Curfman, in an exclusive interview given to the AMERICAN GAS JOURNAL representative, declared early Friday morning that he had found the trip extremely delightful. He was disappointed when he was deprived of the privilege of seeing the sunrise from the deck because of a heavy fog that shut out all the surroundings.

Leigh Wickham, we learned, enjoyed not only the boat trip but also the journey on the trains that made connections for him. Mr. Wickham added to his many acquaintances as his train carried through the country.

From every standpoint, it must be stated that the trip was a most enjoyable one and the officers of the association deserve great credit for the way in which it was managed. Albert G. Schroeder, secretary of the association, worked tirelessly making sure that everyone was getting all possible out of the trip.

The Market for Water Heaters*

Sales Resistance That Is Encountered

By R. H. LEWIS, Ruud Manufacturing Company

It is my desire to discuss in this paper two factors of this industry as we see them to-day: First, the market for automatic water heaters; second, sales resistance.

I do not think it is necessary to establish the fact that this great unsold market exists. To many of you it is an old story. Yet I think we should grasp every opportunity to discuss this great unsold market until we become so thoroughly imbued with the idea that we cannot help but radiate this information to everyone with whom we come in contact.

Figures have been presented, statements proven times without number, that the automatic water heater is the appliance which reaches the great unsold market of the gas industry. It offers an opportunity to increase the sale of gas in this country at least 33 1/3 per cent. Were we to sell an automatic heater to 3,000,000 of the 7,500,000 live prospects now on our mains, it would give an additional yearly send out of 120,000,000,000 cu. ft. of gas. Realizing this can be accomplished without any large capital expenditure, using the existing mains and services, it becomes doubly attractive.

The above figures are broad in character and do not impress one in just the same way that a more detailed analysis might. I have selected a group of twenty-five companies, an analysis of which should certainly prove that this great unsold market exists. These companies have a total of 105,200 customers:

Customers Using	Per Cent of Customers	Average Monthly Bill
0 to 1,000 cu. ft. per month.....	25.2	$1.04
0 to 2,000 cu. ft. per month.....	60.2	1.70
0 to 3,000 cu. ft. per month.....	81.2	2.17

Here we see 81 per cent of the gas users of this group burn less than 3,000 cu. ft. of gas per month, and return an average bill of $2.17. This is only 7 cents per day. You cannot help but ask, "Is gas expensive?" If the average gas rate in these towns were cut one-seventh, the result would probably be bankruptcy for the gas companies. Yet to 81 per cent of the gas users it would mean a reduction in the cost of living of only 1 cent a day.

Take the data, returned by one city of this group having a population of 40,000, situated in a prosperous agricultural district, a railroad center, and having, I would say, a little above the average in manufacturing plants:

Class of Consumption	No. Customers	% Customers	Average Consumption Per Customer	Average Monthly Bill
0 to 600	1,682	9.6	345	$1.00
700 to 1,000	1,452	8.3	877	1.18
1,100 to 2,000	5,564	31.7	1,582	2.14
2,100 to 3,000	4,548	25.9	2,563	3.46
3,100 to 4,000	2,220	12.6	3,484	4.70
4,100 to 5,000	947	5.4	4,492	6.06
5,100 to 7,500	696	3.6	5,965	8.05
7,500 to 10,000	188	1.1	8,511	11.49

Remaining meters not listed. Total meters set 17,570.

Consider 3,500 cu. ft. of gas as the accepted average monthly consumption of an automatic heater in a home having a family of five adults. One can almost see at a glance there are very few, if any, automatic heaters operating in the homes represented in the first five groups. In this class we have those using less than 4,000 cu. ft. of gas per month, taking one meter to each customer. Speaking in terms of meters, the data shows there are in this city 15,466 or 88 per cent of the total meters installed, that supply gas to very few automatic heaters, if any. These figures prove that in this town we have failed to sell scarcely any automatic heaters to 88 per cent of the gas users. You will find these figures are true of almost any town in the United States.

In that class using less than 1,000 cu. ft. per month, we must recognize many small customers. The great unsold market falls in the class which uses from 1,100 to 4,000 cu. ft. per month. Here we find 12,332 meters, which is 70.2 per cent of the total meters and show a monthly consumption of approximately 28,000,000 cu. ft. To be conservative, we will check out renters, those who will not add any improvements to the home, which, we will say, leaves us one-third as real live prospects, or 4,110. Let us now suppose we are able to sell each of these an automatic water heater. Applying the above-stated average monthly consumption of 3,500 cu. ft. per heater, we would have increased the monthly sale of gas 14,385,000 cu. ft. It is well to remember this could be accomplished without any added plant overhead. We would now be selling these very same customers 42,385,000 cu. ft. per month. To the home owner in this class a number of automatic heaters can be sold, but it is here that we will find ideal prospects for tank or circulating heaters.

It is not my intention to discuss the apparatus, its construction, or the selection of the proper size and type, but I cannot pass this by without a word of caution. We are suffering to-day, in many localities, from improper installations, selling of wrong type, and above all selling of undersized heaters. There is not a mechanical devise on the market to-day whose

*Paper presented at Michigan Gas Association meeting.

service can be so easily impaired and whose operating cost out of all proportion to the service rendered, as an automatic heater improperly installed, or one undersized that must be overworked to meet the demands of the user. So much of our future business depends upon satisfied users that each sales department should have someone competent to specify and recommend the proper size and type, also the location of the heater. Here we have a market of untold possibilities. Would it stand up under the keen eyes of a country banker who might ask, "What percentage of this market is being sold?" It certainly does check one's enthusiasm to have to reply, "Less than 2 per cent." And especially is this true when we recall one well-known manufacturer of automatic water heaters is this month celebrating his twenty-fifth anniversary.

Is it the intention of this great industry and the manufacturers of automatic water heaters to be satisfied with this very small percentage of sales, or will we do as the managing committee of the commercial section of the American Gas Association suggests in the resolution they passed early this year—make the selling of automatic water heaters a continuous and major effort?

I do not think there is any magic string to be pulled that will create an immediate demand for automatic heaters, nor do I think any set sales plan can be worked out that will accomplish the task. I do not think we are going to increase the percentage of sales to any marked degree until we have sold the great body of American home owners. That which offers the real sales resistance in this business to-day is the gas bill.

Regardless of the first cost of the appliance, 99 per cent of the home owners solicited know they will be adding a fixed monthly charge to their living expenses. It does not matter if you are working in a town having natural gas at 60 cents per thousand cubic feet or one with artificial gas at $1.50 per thousand cubic feet. The home owner in Kentucky who receives a monthly bill of $1.50, which represents his total natural gas bill for cooking and heating water, thinks he is just as much overcharged as one in Michigan who receives a bill for $6.

Gas as a domestic fuel has so many advantages over competing fuels that this can be no great objection. To me it proves that we have never sold the value of 1,000 ft. of gas.

It is well within the memory of many here that when a gas stove was sold someone visited the housewife and taught her, not only to operate the appliance, but how to obtain the best results from a minimum of gas used. I think we did more by this method than any other way. How many of us have adopted this plan when an automatic heater is sold? How many of our customers have any idea what a hundred gallons of water really is? How many men know the number of gallons of hot water they use for the morning bath? They may make a rough guess, which will be 50 per cent off either way. These same men will tell you when they receive their gas bill that gas hot water is expensive.

With a market such as we have with an appliance which means so much to the comfort of the home, let us put our shoulder to the wheel and help put the gas bill over the hill.

Advertising Men Organize on Oct. 2

The American Gas Association announces that the Public Utility Advertising Association, which is to apply for membership on the National Advertising Commission, the technical division of the Associated Advertising Clubs of the World, will be formed at the time of the American Electric Railway Association convention in Chicago, Oct. 2 to 6. Each gas advertising man or each gas company doing advertising is eligible to membership and privileged to participate in the organization meeting.

At the meeting preliminary organization will probably take place and a formal constitution adopted, along with a "Standard of Practice," as well as election of officers and directors.

This is an important move and deserves the industry's fullest attention. In substance, it is felt that it provides an agency through which the utilities, as such, will be able to do three things: (1) Obtain national recognition from newspapers and other publications that they are regular and consistent advertisers, and secure the benefits that accrue from such recognition; (2) obtain representation as such (utilities) on the National Advertising Commission; (3) permit affiliation with local advertising clubs and bring about the wide local benefits which come from such participation.

It will be seen that this organization, which is necessary in order to obtain recognition from the Associated Advertising Clubs of the World, is largely a matter of individual participation, and in nowise duplicates any existing work or organization, nor does it interfere with or duplicate the work of State committees; rather it augments that work and gives a further and more intimate tie-in with the newspapers and other publishers.

If it is possible it would be well to try to be present or be well represented at the organization meeting, the date and place of which will be made known in plenty of time.

Commercializing the Residual Department of a Gas Plant

(*Continued from page 273.*)

It is understood that there will be an additional charge for bench fuel and boiler fuel.

In view of the above it is recommended that the residual department be placed in the hands of the commercial department, and handled in as aggressive a manner as the appliance department is now handled in most gas plants. Of course, it is understood that the commercial department will necessarily rely upon the engineering department for technical information regarding the use and value of the residuals to be disposed of.

Corpus Christi Gas Plant Changes Hands

Corpus Christi, Tex.—Four deeds were filed here on Sept. 13 calling for the sale of the Corpus Christi Gas Company to the Corpus Christi Gas Company of Arizona and holding a permit to do business in Texas, for a consideration of $1 each. With the Prewitt & Bettis interests promising gas from the White Point well within the next ten days on the side of the city limits, some believe that the change in business of the artificial company has significance. The manager of the artificial company which was sold was cited to appear before the City Council and show cause why the present rates should not be reduced.

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company		Maturity	Sept. 21, 1922 Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May 1, 1925	106½	107½
Brooklyn Union Gas Co.	First Consol. 5s	May 1, 1945	99½	100
Columbia Gas & Elec. Co.	First 5s	May 1, 1927	95¾	96½
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 7½s	Dec. 1, 1945	110	—
Consol. Gas, Elec. Lt. & Pr. Co.	General 4½s	Feb. 14, 1935	92	92½
New Amsterdam Gas Co.	First Consol. 5s	Jan. 1, 1948	88	90
Denver Gas & Elec. Co.	Gen. (now 1st) 5s	May 1, 1949	95	96
Detroit City Gas Co.	Gold 5s	Jan. 1, 1923	100	—
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan. 1, 1928	98	100
Hudson County Gas Co.	First 5s	Nov. 1, 1949	91¾	93
Laclede Gas Light Co.	Ref. & Ext. 5s	Apr. 1, 1934	93	93½
Louisville Gas & Elec. Co.	First & Ref. 7s	June 1, 1923	100¼	101¼
Michigan Light Co.	First & Ref. 5s	Mar. 1, 1946	90	92
Milwaukee Gas Light Co.	First 4s	May 1, 1927	94½	95¼
Pacific Gas & Elec. Co.	Gen. & Ref. 5s	Jan. 1, 1942	94	95
Pacific Gas & Elec. Co.	First & Ref. 7s	Dec. 1, 1940	108	109½
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov. 1, 1937	97⅞	98½
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sept. 1, 1947	96	96½
Chicago Gas Lt. & Coke Co.	First 5s	July 1, 1937	97⅜	98
Portland Gas & Coke Co.	First & Ref. 5s	Jan. 1, 1940	93	95
Seattle Lighting Co.	Refunding 5s	Oct. 1, 1949	85	87
Southern California Gas Co.	First 6s	Nov. 1, 1950	98	—
Utica Gas & Electric Co.	Ref. & Ext. 5s	July 1, 1957	91¾	—
Washington Gas Light Co.	General 5s	Nov. 1, 1960	95½	96
Western States Gas & Elec. Co. of California	First & Ref. 5s	June 1, 1941	91	92

Florence (S. C.) Company Reorganized

Florence, S. C.—The Florence Gas Company has been reorganized and hereafter will be known as the Florence Gas & Fuel Company. The officers of the new company are M. D. Lucas, president; S. I. Sulzbacher, vice-president, and S. W. Brown, secretary-treasurer. Mr. Brown is a well-known Southern gasman and the other gentlemen are representative business men of Florence.

The plans of the new company have been laid out to aggressively farm the city of Florence and to stage some intensive merchandising sales. Work has been started on commercial activities which include a "good-will" advertising campaign in the local papers and a saturation survey of the company's mains.

Plans are also being worked out to reconstruct and enlarge the manufacturing and distribution equipment.

Gas Company Sold at Auction

Tyler, Texas.—The property of the Tyler Gas Company has been sold at public auction. There was only one bidder, H. L. Smith, of Cleveland, Ohio, who represented the bondholders. The price paid was about $8,000.

There will be no change in the management of the property, Mr. Burger still being manager.

It is stated that the Tyler Gas Company has between twelve and thirteen miles of mains in the city, and they were laid with a view some day of carrying natural gas. Mr. Burger stated to-day that the gas company would welcome natural gas and said its advent into the city would mean cheap fuel which ought to attract factories of different kinds.

Improvements will probably be made in the plant so that it will be fully prepared to take care of increased business in the city.

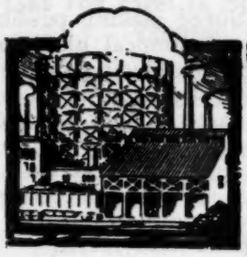
Cities Service Gets Antwerp Plant

Cities Service Company has just completed arrangements for taking over the plant and facilities of the Societe pour le Commerce et l'Industrie des Huiles Minerales, of Antwerp, Belgium.

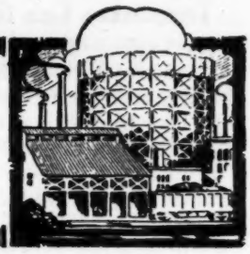
The plant is a complete importing station at Antwerp, Belgium, consisting of tankage for lubricating oils, gasoline, kerosene, gas oil, etc., with facilities to barrel and can, also tank cars and barges for distribution to the wide trade territory supplied by the port, including Belgium, Holland, Switzerland, Alsace-Lorraine and the Rhine Valley in Germany. This will prove an important export outlet for the products of Cities Service Company oil subsidiaries. Captain Fernand Petit, of Antwerp, will have charge of the property.

Gas Rate in Buffalo Fixed at 65 Cents

Albany, N. Y.—The Public Service Commission has decided the question of gas rates in Buffalo, which has been pending for three years. It ordered the plants and systems of the Iroquois Natural Natural Gas Company and Niagara Gas Corporation that the price of gas shall not exceed 65 cents per thousand cubic feet.



NEWS OF THE GAS INDUSTRY



Shows Low Rates at P. S. C. Hearing

Harrisburg, Pa.—The question of adequate tariff rates for the Potter Gas Company, of Potter County, which was first brought before the Public Service Commission in 1919, was argued again recently before Chairman W. D. B. Ainey and Commissioners Milton J. Brecht and John S. Rilling. The case originated in 1919 when Chester H. Ashton, of Tioga County, protested an increase announced by the company, as unreasonable.

Later Ashton filed another complaint alleging that rates of the company were excessive and an undue and unfair discrimination between the patrons of the company in Pennsylvania and the patrons in New York State.

In July, 1921, before these complaints were finally disposed of, the gas company filed another tariff. To this complaints were filed by the borough council of Galeton and S. Boyer, chief clerk to the superintendent of the Buffalo & Susquehanna Railroad Company; Chester H. Ashton and Charles Reinwald, a merchant of Gaines, Tioga County.

In Nov., 1921, the commission entered an order sustaining the compalints and requiring the gas company within fifteen days from the date of service of the order to file a new tariff, effective upon one day's notice, providing lower rates than those against which the protest had been made. The next month the gas company filed a petition for rehearing urging several technical points. Without granting a rehearing the commission filed a revised report under date of last January which superseded the report of the preceding November but which again sustained the complaints in so far as the alleged unreasonableness of the rates was concerned.

The Potter Gas Company thereupon appealed to the superior court. While preparing testimony which had been given before the commission, for review by the superior court, counsel for the gas company discovered an error in the testimony of Samuel S. Wyer, an engineer who had been employed to make a thorough inventory of the plant and of operating expenses.

After filing in the superior court an affidavit of the engineer, relating to this error, the company joined with the Public Service Commission in a petition to the superior court praying that the record be remanded for the purpose of taking testimony to correct the alleged error in operating expenses and further to permit the respondent to make an allocation of the valuation of its property between the States of New York and Pennsylvania so that the commission might reconsider the case in the light of such testimony.

This petition having been granted, the case was brought before the commission once more. Yesterday's rgument by Archibald F. Jones, Coudersport, attorney for the respondent company, presented the case for the company in such light that should the figures submitted as to operating expenses, depreciation and allowances for depletion of the gas fields of this company stand, the commission will probably grant the increased rates. In the light of new fixtures submitted since the case was brought before the commission this time, the company cannot make 7 per cent on its money invested, and pay for depreciation and depletion, unless the advance, twice denied, is finally granted. Figures submitted during the argument yesterday, contend that the company is makin gonly 0.031 per cent on its investment under present ratees.

The Potter Gas Company produces gas in the counties of Potter and McKean and is supplying natural gas to the public in the boroughs of Port Allegany, Shinglehouse, Coudersport, Austin, Ulysses, Westfield, Knoxville, Elkland, Lawrenceville, as well as a number of villages in Potter and Tioga counties and to distributing corporations at Elmira, Corning and Addison, N. Y.

Among those who attended the argumeent were Attorneys A. F. Jones, W. F. DuBois, W. K. Sweatland, representing the Potter Gas Company, and W. H. Richards, vice-president of the company.

Drilling in West Virginia

Light gassers and oil gells are the offering of the West Virginia field. In Burning Springs district, Wirt County, the Heasley Oil & Gas Company completed and shot in the Big Injun sand No. 3 on the G. W. Righter farm. It is good for twelve or fifteen barrels a day. In the same district the Eight Sands Oil Company has completed and shot in the same formation No. 16 on the Nannie Kidwell farm. It is not good for more than three barrels a day. In Clay district, Monongalia County, the Clay District Oil & Gas Company has a fifth sand gasser on the Kuey Stull farm.

In Liberty district, Marshall County, the Manufacturers Light & Heat Company's test on the J. S. Hager farm is a gasser in the fifty-foot sand. In the same district, the same company's second test on the Maley-Yeater farm is a gasser in the Gordon sand. In Manningtton district, Marion County, the Eastern Petroleum Company has drilled No. 2 on the Frank Snyder farm into the Big Injun sand and the hole filled up 1,000 ft. with fluid. In Batelle district, Monongalia County, the Pittsburgh & West Virginia Gas Company has a fifty-foot gasser on the Jasper Shriver farm. In McElroy district, Tyler County, A. J. Simmons & Co. are drilling their test on the W. E. McIntyre farm from the Big Injun to the Gordon sand.

Tennessee Gas Rates Low

Nashville, Tenn.—Comparative net rates for artificial gas as charged in Tennessee are 20 per cent less than the average net rate prevailing in the 384 cities in the United States, where a higher rate than $1.75 per thousand cubic feet is charged.

Comparative figures showing that Tennessee gas consumers are served at an average of 44 cents per thousand feet less than the average consumer throughout the country have just been furnished the Tennessee Railroad and Public Utilities Commission by H. D. Fitch, general manager of the Kentucky Public Service Company.

While Mr. Fitch's analysis of gas rates does not dwell on population, per capita of consumption, and other important essentials on which gas rates are based, the utilities commission has found it an interesting comparison and indicating that the Tennessee public is served at a most reasonable figure.

The Tennessee average is compiled from eight principal cities where population and the other elements that fix gas costs have a wide range, starting with the $1.20 per thousand figure prevailing in Memphis, to the $2.25 figure charged in Jackson. A table showing the gas rates for the nine cities accompanies Mr. Fitch's data supplied to the commission. This table shows gas rates in various Tennessee cities as follows:

Chattanooga	$1.65
Bristol	2.02
Memphis	1.20
Knoxville	1.50
Clarksville	1.75
Jackson	2.25
Nashville	1.80
Johnson City	1.90

Other Southern cities have a gas rate higher than most of those prevailing in Tennessee, so the figures show. In Augusta and Atlanta, Ga., $1.90 per thousand cubic feet is charged. The rate in Biloxi, Miss., is $2.69, while in Hattiesburg, Miss., $2 is charged. The price in Meridian, Miss., is $1.90, and that in Baton Rouge, La., is $2.

A study of the rates in Northern and Eastern cities ranges even higher with practically all rates for artificial gas fixed in excess of $2 and many of them reaching as high as $3.50, and in some instances as high as $4.

To Supply Gas

The Western Gas & Pipe Line Company, a Missouri corporation, has submitted a form of franchise to a committee of the Girard (Kan.) Chamber of Commerce for approval or amendment, and are holding out some hope for supplying Girard homes with natural gas before snow falls. The terms of the franchise, however, give them a year in which to complete their line.

This company has bought up a number of leases in the Walnut field and has laid a pipe line into Walnut, by which it is now supplying a number of homes in that city. Their strong wells are a few miles southwest of Walnut, in Neosho County, about eighteen miles from Girard. They propose to furnish gas at 65 cents per thousand cubic feet.

Barr Representing Surface Combustion Company

Robert R. Barr, who was in the industrial department of the Consolidated Gas & Electric Company, of Baltimore, for nine years, is now in business for himself at 15 Hopkins Place, Baltimore, Md. He is now specializing in industrial gas fuel service, representing the Surface Combustion Company, which makes a complete line of gas-fired industrial furnaces and equipment. He is also representing pyrometer manufacturers, boiler manufacturers, etc.

Contract for 366 By-product Ovens Closed by Koppers Co.

The Koppers Company has been awarded a contract for 366 by-product coke ovens of its new design for the Carnegie Steel Company at Clairton, Pa., together with a by-product plant and benzol plant. These ovens will be of the combination type, so arranged that they may be heated with producer gas or blast furnace gas, releasing all of the coke oven gas for use in the mills.

These ovens to be built at Clairton are of a design recently perfected by the Koppers Company and are said to represent a great improvement over any previous development in the by-product coke industry, either in this country or abroad. Improved quality of coke produced making possible much more economical blast furnace practice by reducing the consumption of coke per ton of iron produced, a faster coking time giving a greater capacity per oven per day and stronger construction are the principal advantages claimed for this new design.

This addition will increase the carbonizing capacity of the Clairton by-produce coke plant by 8,500 tons of coal per day, and when completed will bring the carbonizing capacity of this plant up to a total of 21,500 tons of coal per day. The present by-product coke plant at Clairton, already the largest of its kind in the world, furnishes coke and gas necessary to operate the blast furnaces and steel mills of the Carnegie Steel Company in the Pittsburgh district. The original installation, consisting of ten batteries of sixty-four ovens each, was completed in 1917 and during 1918 two additional batteries of sixty-four ovens each were installed. This last addition of 366 ovens brings the total up to 1,134, all of which will have been designed and built by the Koppers Company.

Joseph Becker, of Pittsburgh, consulting engineer of the Koppers Company, is the inventor of this new oven. An experimental battery of ovens of this design has been in operation at the Koppers Company plant in Chicago for the past year, and it is believed that the performance of this experimental plant was largely instrumental in deciding the Carnegie Steel Company to build this new type of oven.

Gas Company Earns $7,277 Net

Spokane, Wash.—Net earnings of $7,277.28 for the month of August are shown by the Spokane Gas & Fuel Company in its monthly report filed with the Commissioner of Public Utilities. Gross earnings for the month were given as $40,777.58.

For the twelve months ending Aug. 31, the net earnings are given as $105,747.44, while the gross earnings are $526,922.19.

No report was filed for July, but for the month of June net earnings are shown as $11,826.07, and for the twelve months ending June 30, $104,656.02.

Gas for Fuel Is Speaker's Theme

Amsterdam, N. Y.—Gas for fuel will go a long way toward solving the coal question. It is a waste to burn coal direct for heating purposes. This is not the only coal crisis we are going to have. There is going to be one every other year, and the gas companies can buy to better advantage and in greater quantity than the individual. Let the gas companies worry about buying the coal.

The above appear to be the most interesting statements in an interesting talk given before the Kiwanis Club by Travis H. Whitney, of New York, long connected with public utilities, twelve years a member of the Public Service Commission, and now on the State Fuel Committee in almost daily consultation concerning conservation of fuel and methods of securing coal during the coming winter.

Mr. Whitney announced his subject as "Gas." Gas, he said, is a thing that is taken for granted because it has been used so long. No one now alive was born before gas came into use. He reviewed the influence of gas lighting as related to an extension of the hours of human life in education and recreation, and the fight between electricity and gas before the latter succumbed as a general means of lighting. The superiority of electricity having been finally demonstrated, gas went into another field—fuel, and is now established upon a basis superior to that upon which it existed as the great lighting. As a medium of community heating it has become a permanent necessity in all large modern cities.

Speaking of the local gas plant, Mr. Whitney quoted figures showing that the company is furnishing gas from material which distributed to the customers individually would mean approximately a ton of coal and a barrel of oil to each. "Figure out," he said, "how far you could go in a year with that quantity as compared with what you do with the gas you are using." Used as fuel, gas has a greater efficiency than coal. The gas company, for one thing, can use bituminous coal. They can buy in greater quantity, can secure enough coal for their uses for an entire winter through the railroads when an individual cannot utilize the roads in securing enough for his use. This is not the only coal crises that the country will be called upon to face. There will be one about every other year. Let the gas company worry about coal.

A portion of the talk was devoted to advice directly apropos of the present conditions. "You will be told much about conservation," said the speaker. "You will be told to use wood, to burn bituminous coal. This coal will give as much heat if not more than the hard coal, and to burn it will be an advantage in this way—that it will cause the producers of hard coal to come to a more speedy settlement, fearing that their market will be permanently taken away. By the end of the winter there will be enough coal for the winter. The time to conserve is now. If not, there will be a buyers' panic and the price will be governed according to the magnitude of the panic. It is very important to prevent profiteering. Don't light the furnace until you absolutely have to. Save fuel whenever possible. Eat one cold meal a day now in order to save one cold day in the cold months."

Discussing profiteering, the speaker went into some detail concerning the business of a public utility as a general proposition, and of a gas company in particular. He argued that it is impossible for them to profiteer. As a public utility their books are open at all times to a citizen, who, if he be not an accountant, is privileged to bring one with him. Their work is supervised by the Public Service Commission in a manner that prevents excess profits but which guarantees fair profits, for these are imperative, since it is necessary that they be able to extend their field to keep pace with the growth of a community.

Concluding, Mr. Whitney quoted the German efficiency experts who have stated that to burn coal as a mere conflagration for heat is a waste, and said that there is little doubt but that the local company will be willing to advise with any who wish detailed information concerning the means of using gas as fuel. "Gas is the best form of fuel to consider and study."

Gas Rates Reduced in New York State

Albany, N. Y.—A reduction of 5 cents per thousand cubic feet in the gas rates in the cities of Albany, Utica, Schenectady, Syracuse and Rochester ordered by the State Public Service Commission. A statement by the commission said the order would result in an annual saving of $325,000 to 210,000 consumers in the different cities. Similar orders applying to other cities of the State will be made immediately, it also was announced.

High prices for coal and coke for the last few months and which still exist proved a hindrance to a greater reduction than was ordered, the commission's statement said.

A change in the standard of gas, to conform with the new standard recently established for New York City also was ordered. This changes the standard of 585 B.t.u., which has prevailed upstate for the last six years, to 537 B.t.u.

In regard to reductions in rates to be made in other cities, the commission said: "The orders made affecting Albany, Schenectady, Utica, Syracuse and Rochester are only preliminary, and similar orders applying to the other cities of the State will be made immediately."

State Loses Mobile Gas Case

Mobile, Ala.—After hearing of the proceedings had been concluded in Jacksonville, Fla., recently, Federal Judge Henry D. Clayton, one of the three Federal judges presiding throughout the session, announced that a temporary injunction would be granted restraining the Alabama Public Service Commission from enforcing its recent order reducing gas rates in Mobile. It is stated that Attorney General Harwell G. Davis, representing the Alabama Public Service Commission, will take an appeal from this ruling to the United States circuit court of appeals.

In addition to Judge Clayton, Federal Judge C. T. Erwin, of Mobile, and Federal Circuit Judge C. P. Bryan, of Jacksonville, also presided while the proceedings filed by the Mobile Gas Company, seeking to enjoin the Alabama commission, were being considered.

Extra on Fayette Gas

Pittsburgh, Pa.—Fayette County Gas Company declared the regular monthly dividend of 2/3 per cent, also an extra dividend of 2 per cent. The extra dividend is payable in Liberty bonds of the fourth issue. Both dividends payable Sept. 20 to stock of record Sept. 15. The transfer books do not close.

Gas Rate Reduced

Geneva, N. Y.—H. O. Palmer, vice-president of the Empire Gas & Electric Company of this city announced a reduction of gas rates following the order of the Public Service Commission changing the gas standard of the State. Mr. Palmer says:

"The Public Service Commission in an order dated Sept. 15, changed the standard of gas in the State from 585 to 537 B.t.u. This change will reduce our gas production costs about one-half cent per hundred cubic feet. The company has earned for the first eight months of 1922 a little less than the rate of 7 per cent per year on the cost value of its gas property, even though that period was the best in the history of the gas department of the company. While this return is less than the commission has allowed, under all recent cases, we believe the increased use of gas, which will result from reducing the gas rate, will still further reduce costs and we, therefore, have decided to pass along these savings to our customers by reducing the gas rate one cent per hundred cubic feet.

"The present rate for 100 cu. ft. is 18½ cents for the first 10; 16 cents for the next 10, and the balance 14½ cents. The new rate will be 17½ cents for the first 16; 15 cents for the next 10, and 13½ cents for the balance.

"We will file these rates now and they will go in effect, if the commission approves, after the usual thirty-day period, or on or about Nov. 1 of this year."

To Improve Gas Supply

Coalinga, Cal.—Under the direction of City Superintendent B. J. Pardee, the board of trustees is having extensive repairs and extensions made to the city gas equipment that will result in a more even and stronger gas supply throughout the city within a short while.

For many years past the gas supply has been unsatisfactory to the users principally because of its unsteady pressure and unreliability due to the fact that a blower was taken off the pressure was very low and unsatisfactory.

Under the plans arranged by Pardee the entire gas-line system throughout the city is being gone over. All the dead-end lines are being connected and a loop system installed so that there will be a constant circulation into every section of the city at all times. Old mains that have become clogged up due to their age are being taken up and larger pipe installed.

An agreement has been made with the West Coalinga Oil Development Company, operating on the old Marion property on Section 6, for the purchase of the gas supply from the company's new well. Pipe lines are now being laid to the location and within a few days the gas from this well will be flowing into the city mains.

It is estimated that 200,000 cu. ft. of gas is at present escaping from the well, which is more than ample to supply the present demands of the city. In addition to the supply from the West Coalinga well, the city will continue to take gas from the Traders' property, which will eventually be acquired by the city if the present plans are carried out, and from the California Oil & Gas property on Section 6.

The combined flow of gas from these properties will assure the gas users of the city a continuous supply of gas at even pressure.

Automatic regulators will be installed on the main feed lines from the source of supply. These regulators are automatically controlled in such a manner as to permit only an even pressure to go into the lines, and through these the entire city will be kept under a positive pressure twenty-four hours daily.

According to the city superintendent the gas from the old Marion property will be run into the city lines within ten days and that improvement will be had in the service and supply of gas immediately. Within a period of thirty days the entire system will be put into first-class shape.

It has been intimated that with an abundant supply of natural gas and elimination of the gas manufacturing plant, it may be possible that a substantial reduction will be made in the gas rates to consumers, and that special rates will be made for gas used for office, store and home heating purposes. No promises, however, have been made in this regard, but it is possible that the gas consumers will be given the advantage of a rate reduction in addition to a much better supply of gas.

Bonds Called

Bonds called for payment this month in advance of maturity aggregate $115,275,000, as compared with $96,725,8000 in August and $669,400 in September, 1921. Of these, $113,640,200 are to be cases replaced by issues bearing a lower rate of interest. In September, 1921, no issues were paid off in full. The remainder of $1,634,800 called this month represents for the most part sinking fund calls. The three largest issues to be paid off, each for $25,000,000, are Consolidated Gas of New York convertible 7s, Humble Oil & Refining 7s and New York Central ten-year 7s. Practically all the Consolidated Gas bonds were converted into stock at par. The New York Central issue was financed through recent sales of a refunding 5 per cent issue, due in 2013. The Humble Oil bonds will be paid from the proceeds of the sale of ten-year 5½ per cent debenture bonds recently offered.

Report on City's Gas Situation

Louisville, Ky.—Steps taken by the Louisville Gas & Electric Company to meet the natural gas requirements of Louisville will be the subject of a report to be submitted to the Board of Public Works and Mayor Huston Quin by Dr. Harry M. Limbach, inspector of Gas & Electricity.

Dr. Limbach made a survey of the entire gas field several weeks ago following the announcement of the company that it will seek again a right to mix natural and artificial gas and charge a higher rate during winter months.

For the last two years the company has obtained the higher rate for three winter months—December to March.

Colorado Incorporations

The Juanita Milling & Fuel Company has been incorporated for $50,000. The home office is Grand Junction, Col., and the incorporators are E. M. Goodrich, H. E. Soule and M. N. Due.

The George A. Guggan Oil Company, $50,000. The home office is Denver and the incorporators are George A. Duggan, Howard L. Ward and Walter G. Hedburg.

Left-Hand vs. Right-Hand Ovens

While it is advisable to carry both right and left hand ovens—especially in certain style numbers—the proportion of right-hand ovens to left-hand ovens is a matter which dealers should give careful consideration.

Some dealers are of the impression that they should carry as many right-hand ovens as left-hand ovens and point to the fact that their sales are about the same on each kind, as proof of the correctness of their opinion. Such proof, however, is somewhat misleading, inasmuch as salesmen are often forced to sell the advantages (?) of the right-hand oven when the supply of ranges having left-hand ovens is exhausted.

"Seven out of every ten gas ranges manufactured by us have left-hand ovens," says A. F. Reedy, our general superintendent. "Few women will buy a right-hand oven if the advantages of the left-hand oven are properly explained—unless they are left-handed.

"A right-handed woman will naturally pick up the article intended for the oven with her right hand. As she walks to the oven she must either shift the baking to her left hand, or open the door with her left hand. If she does the former, she is then required to insert the pie or pudding or roast in the oven with her left hand—a rather awkward operation for most people, with plenty of chances that she burns the back of her left hand against the edge of the oven.

"To open the right-hand oven with her left hand, while standing in front of the oven, she is quite apt to burn the back of her hand on the door frame as the oven door swings open. Moreover, she cannot, while in this position, open the door more than one-third of the distance."

From the foregoing it will be readily seen that both operations are exceedingly awkward. We advise any salesmen or buyer to try it.

There is another phase to the situation, of course. Dealers who purchase an equal amount of both kinds will tie up much more capital in stock, thereby cutting down their turnover. We believe that dealers generally will be safe in following out the proportion with which we manufacture right-hand ovens to left-hand ovens—namely, seven left-hand ovens to three right-hand ovens.—*The Grid.*

Gas and Oil Royalties

Total net royalties accruing to the Federal Government as the result of oil, gas and natural gas gasoline production from leased public lands in certain Western States amounted on Aug. 1 to $6,409,115, according to the United States Bureau of Mines, which has technical supervision of such operations. Royalties reported to the Government during the month of July amounted to $642,607. Of this amount, Wyoming is credited with $355,220, California $269,889, and Montana $17,498. Royalties for the production of oil formed the larger proportion of the July total, and amounted to $629,054; royalties for natural gas are reported at $10,857, and for natural gas gasoline $2,696.

Permission Granted to Raise Rates

San Francisco, Cal.—Permission was granted the Valley Natural Gas and the Midway Gas Companies by the Railroad Commission to increase natural gas rates from 1 to 2 cents per thousand cubic feet for distribution in the Kern River, Elk Hills and Midway oil fields, it was announced.

The increase was allowed, the commission stated, because of like increases imposed upon the distributing companies by the Standard Oil & Pacific Oil Companies.

New Gas Holder for Oakland

Oakland, Cal.—A new 6,000,000 cu. ft. gas holder, 219 ft. high, thirty-two feet higher than the St. Francis Hotel, has just been completed for the Pacific Gas & Electric Company in Oakland at the foot of Castro Street. This holder, the largest in northern California, will supply Hayward, fourteen miles to the east, and Richmond, twenty miles to the north, through high-pressure gas mains. In 1867, when gas was first manufactured in Oakland, the storage capacity was 20,000 cu. ft. with mains running out East Twelfth Street to Thirteenth Avenue, then known as the town of Brooklyn. The present system supplies 95,000 consumers and the holder just added cost $600,000.

Glendive to Have Gas

Glendive, Mont.—"You may announce positively that we will be delivering gas to Glendive consumers by Dec. 1 next, and possibly sooner," is the statement of Silas C. Hopkins, of the Northwest Utilities Company.

Mr. Hopkins, who was in Glendive recently, has been in the field virtually all of the time since the granting of the franchises by Glendive, Terry and Miles City. He said that all necessary arrangements are being perfected and that, barring unforeseen and unexpected contingencies, the pipe lines will be laid and local consumers will be using the fuel before the beginning of the ensuing winter.

Much, in fact nearly everything, hinges upon the delivery of a sufficient amount of pipe for the main lines but, in the opinion of Mr. Hopkins, the company will be able to secure all that is needed, at least for the line into Glendive.

The surveys have been completed and the rights of way secured, he stated. The distance from the well in the Cabin Creek field to Glendive is forty-one miles. The ditching will be done by machinery, and he declares that this part of the task can be completed in about thirty days. He also said the well, which was drilled some time ago, has been repeatedly tested and that it will yield fully 12,000,000 cu. ft. of gas every twenty-four hours.

Permit Granted for Gas Holder

Los Angeles, Cal.—The petition of the Los Angeles Gas & Electric Corporation for permission to build a 10,000,000 cu. ft. gas holder near the Pacific Electric's "air line" tracks at Eleventh Avenue was granted yesterday by the city council, and the city attorney instructed to prepare and present for adoption the necessary ordinance.

Starts Batteries of 287 Ovens

Uniontown, Pa.—Two hundred and eighty additional coke ovens of the H. C. Frick Coke Company resumed operations last week, according to official announcement made.

With the opening of these batteries coke production, it was announced, was 80 per cent greater than that of April 1 last and equal to 60 per cent of the normal output.

Ashtabula Municipally Owned Utilities Are Increased

Ashtabula, Ohio.—Adoption of a service at cost plus 7 per cent profit plan for gas by the City Council recently places under public control here three utilities—gas, electricity, and street railways.

Ashtabula has owned and operated its electric light and power plant for thirty years longer than any other American city. It is expanding the plant now at a cost of $760,000.

In this expansion program, $150,000 was saved in plant construction. This money was turned into the Sinking Fund Commission, which issued new bonds for that amount to buy the Ashtabula Rapid Transit Company Aug. 1.

In the first month's operation of the railway lines, the receipts for August were $6,411.43, a drop of $772.85 from August, 1921. Under private ownership, July receipts were $6,702.11, a drop of $1,124.35 from July, 1921.

Ten one-man cars are being purchased and their use is expected to cut wage costs. Saving in power is also expected when the city uses its own power in operating the lines.

The Ashtabula Gas Company is to be placed under a commission of three, two appointed by the city and one by the company. Rates are to be adjusted each six months to insure the company 7 per cent net profit on a plant valuation of $350,000. A 3 per cent depreciation fund is also to be set aside annually for renewals or retirement of capital, in favor of the city, which has an option to buy within ten years.

Councilman G. A. Ventella, who alone opposed the gas plan, may start referendum proceedings to test the ordinance. He charges the city will be guaranteeing a profit on an overvaluation at the $350,000 figure. The company has lost money the last two years.

Ashtabula does not own its water plant. The private company owning it puts a valuation of $900,000 on its property, and as yet the city has not made any move to buy it. Rates were increased on water this spring. The city plans to build sewers at a cost of $1,500,000.

A home telephone system, with connections with all outside lines, is maintained by a private company in Ashtabula.

Besides its city owned or controlled utility ventures, Ashtabula twice supported commercial ventures by popular stock subscriptions. This was in the construction of the Hotel Ashtabula at a cost of $350,000 and the eight-mill sheet plant of the Ashtabula Steel Company at a cost of $1,300,000.

The steel plant has been in operation three weeks. Officers and directors are serving without pay, except the operating executives. Normally 450 men will be employed.

The city manager form of government, with proportional representation, is established here. Efforts to return to the old system failed. Satisfaction is expressed with the present council, which is representative of districts and groups, and not parties.

Missoula Gas Company Asks Increased Rates

Helena, Mont.—Application of the Missoula Gas Company for authority to increase its rates from a basic charge of $1.85 to $2.25 a thousand feet was received by the State Public Service Commission recently from Thomas N. Marlowe, receiver for the company. The present rates are by a graduated scale, from $1.85 a thousand feet for the first thousand, down to a dollar a thousand for everything used over 35,000 cu. ft. in a month, with a 10 per cent discount for payment of bills by the 10th of the month. The rate asked would permit a uniform flat charge of $2.25 a thousand feet, with a 20 per cent discount for payment by the 10th of the month. Date for a hearing on the application will be fixed by the commission later.

Two Gas Companies May Increase Rates

San Francisco, Cal.—Permission has been granted the Valley Natural Gas and the Midway Gas companies by the Railroad Commission to increase natural gas rates from 1 to 2 cents per thousand cubic feet for distribution in the Kern River, Elk Hills and Midway oil fields, it was announced.

The increase was allowed, the commission stated, because of like increases imposed upon the distributing companies by the Standard Oil and Pacific Oil companies. It was also announced that the increase would only affect industrial and wholesale users.

Adirondack Corporation Is Prepared for Emergencies

Schenectady, N. Y. — Following numerous inquiries regarding the possible increase in the supply of gas for domestic consumption in event that the supply of coal does not meet the demand this winter, officials of the Adirondack Power & Light Corporation have stated that every effort is being put forth to prepare for any emergency which may arise in this line and that provisions are being made to care for a substantial increase in service, should the need arise.

The corporation uses bituminous coal at its Broadway plant at the rate of 110 tons per day, and if no shortage of coal cars arises no trouble is expected in supplying the gas demand, no matter how great it may be. At present the corporation has 7,700 tons of fuel in view, part of which is being received daily at the station, which lends an optimistic tone to the situation, although the present price is double that paid in normal times.

L. H. Jones, head of the purchasing department, whose office was recently moved here from Amsterdam, has just returned from a survey of the Pennsylvania coal fields and, while his report is not optimistic, he feels certain that the corporation's supply will be adequate to cope with the situation, so far at least as Schenectady is concerned. He is keeping in constant touch with the market and will take advantage of any changes which will enhance the production status of the company.

No great increase in the demand for gas consumption has yet been felt here, according to officials, although the work due to new services and extensions has been heavier during the past summer than in several years previous.

The present coal supply of the corporation will run the plant here at full capacity until Thanksgiving, officials estimate.

Liquidating Dividend Paid

The stockholders of the New York Mutual Gas Light Company have received $282 a share, and a statement that further payments would probably bring the total to about $325 a share. The Consolidated Gas Company is buying the assets of the gas light company, and the $282 a share is a dividend in liquidation.